

WHAT IS CLAIMED IS:

1. An electronic control device having a power supply circuit formed on a multi-layered substrate for adjusting a power supply voltage supplied by an external power supply to a desired level, the power supply circuit including a switching component to which the power supply voltage is applied at an input terminal thereof and which is driven by a duty signal and an output voltage forming circuit for producing an output voltage formed from a voltage inputted from the switching device, comprising;

a ground wiring pattern dedicated for the output forming circuit;

a common ground wiring pattern for all electronic circuits included in the electronic control device; and

a connecting part, wherein

the ground wiring pattern is connected to the output voltage forming circuit and defines a ground electrical potential of the output voltage forming circuit,

the common ground wiring pattern is formed in a multi-layered substrate and defines a ground electrical potential of each electronic circuit, and

the connecting part is provided for connecting the ground wiring pattern with the common ground wiring pattern.

2. The electronic control device according to claim 1, wherein:

the output voltage forming circuit includes a smoothing

circuit constructed of a choke coil and a capacitor, and a freewheel component connected in parallel with the smoothing circuit for feeding a current back to the choke coil when the switching component is turned off; and

the smoothing circuit and the freewheel component are connected to the ground wiring pattern of the output voltage forming circuit.

3. The electronic control device according to claim 2, wherein the ground wiring pattern between the smoothing circuit and the freewheel component has impedance lower than that of the connecting part.

4. The electronic control device according to claim 1, wherein:

the output voltage forming circuit further includes an input-side smoothing circuit constructed of a choke coil and a capacitor and a terminal of which is connected to an input terminal of the switching component;

the power supply voltage is applied to the input terminal of the switching component after smoothed out by the input-side smoothing circuit; and

the ground wiring pattern is connected to another terminal of the input-side smoothing circuit.

5. The electronic control device according to claim 1, wherein:

the ground wiring pattern is formed in a top layer of the multi-layered substrate; and

the connecting part is configured as an interlayer connecting part for connecting the ground wiring pattern formed in the top layer of the multi-layered substrate and the common ground wiring pattern formed in an inner layer of the multi-layered substrate via interlayer connection.

6. The electronic control device according to claim 1, wherein:

the ground wiring pattern is formed in an inner layer of the multi-layered substrate different from the inner layer in which the common ground wiring pattern is formed; and

the connecting part is configured as an interlayer connecting part for connecting the ground wiring pattern with the common ground wiring pattern via interlayer connection.

7. The electronic control device according to claim 1, wherein the connecting part has a via hole through which the ground wiring pattern is connected with the common ground wiring pattern.

8. The electronic control device according to claim 1, wherein the connecting part has a through hole having a conductive material inside through which the ground wiring pattern is connected with the common ground wiring pattern.

9. The electronic control device according to claim 8, wherein the ground wiring pattern is connected with the common ground wiring pattern via a ground terminal of an electronic component inserted in the through hole.